PROCEEDINGS OF THE
ROYAL ENTOMOLOGICAL SOCIETY
OF LONDON

SERIES C. JOURNAL OF MEETINGS

VOLUME 26 No. 7, 1961

ORDINARY MEETING

WEDNESDAY, 1st NOVEMBER, 1961, at 5.30 p.m. (Tea 5 p.m.)

AGENDA

1. Confirmation of the Proceedings of the Ordinary Meeting held on 4th October, 1961.
2. Recommendation of candidates for Fellowship. First reading.
3. Recommendation of candidates for Fellowship. Second reading.
4. Announcement of election of new Fellows.
5. Additions to the Library [see p. 28].
6. Admission of Fellows.
7. Papers accepted for publication in the *Transactions*.
8. Exhibits.
9. Communications.

1. **Dr. P. T. Haskell**

(*Anti-Locust Research Centre*)

Locust survival at sea

[ABSTRACT]

The migration pattern of swarms of the Desert Locust (*Schistocerca gregaria* Forskål) regularly involves passages across the sea. There is evidence for the survival of swarms after crossings in excess of the flight potential of the locusts, which raises the problem of the mechanism involved.

An experimental study of a possible survival mechanism has been made and will be described.

2. **Dr. K. U. Clarke**

(*University of Nottingham*)

Some responses of metabolism in insects to changes in environmental temperature

[ABSTRACT]

While it is generally held that the metabolic rate of an insect is directly proportional to its body temperature, there have been very few studies on the manner in which the metabolic rate changes with changing temperature. Methods of measuring the metabolic rate under these conditions are discussed, together with some of the difficulties in interpreting the results.

Using changes in the body temperature of *Locusta migratoria* L. as an index to its metabolism, experiments have shown that the kind of response given by the insect to increasing air temperature varied with the physiological condition of the locust. The manner of its variation suggests that there is a positive regulation of metabolism apart from the passive increase to be expected as a result of heat diffusion into the insect. Other studies on the effect of changing temperatures on oxygen consumption support this proposition.

These facts, together with a consideration of other published work, are used to form a working hypothesis dealing with the relationships between temperature and metabolic rate in insects.

NOTICES

The next meeting will be held on *Wednesday, 6th December*, 1961 :

(1) **Dr. D. J. Lewis.**—Simuliidae in Northern Venezuela.

(2) **Mr. G. Surtees.**—Experimental studies on vertical stratification in graminivorous beetles.

At its meeting on 1st November Council will be giving preliminary consideration to the composition of Council for the coming year. The Secretary will be glad to receive suggestions of names of suitable candidates, which will be considered by Council on that date.

Patrick Buxton Memorial Prize

The Dean of the London School of Hygiene and Tropical Medicine has pleasure in announcing the result of the essay competition, announced in the spring of 1960 and closed in March, 1961, for the Patrick Buxton Memorial Prize. The Prize of £150 has been awarded, on the recommendation of the Board of Adjudicators, to Dr. B. O. L. Duke of the Helminthiasis Research Unit, Kumba, Cameroons, West Africa, for his essay entitled " The natural history of loiasis ". The essay will be bound and, appropriately inscribed, lodged in the Library of the London School of Hygiene and Tropical Medicine.

Proceedings of the Ordinary Meeting held on 4th October, 1961

Professor G. C. Varley, President, in the Chair.

Present, 90 Fellows and 21 Visitors.

The minutes of the Ordinary Meeting held on 5th July were confirmed and signed by the President.

The names of the following candidates for election were read for the first time : Mr. Imtiaz Ahmad ; Dr. P. V. Ananthakrishnan, M.Sc., Ph.D. ; Dr. Nazir Ahmad Aslam ; Mr. Peter Lawrence Napier Bax, M.A. ; Mr. Terrence Victor Bourke, B.Sc. ; Mr. John Hugh Brown, M.Sc. ; Professor Michio Chujo ; Mr. Gordon Richard Conway, B.Sc. ; Capt. Anthony Crawforth, R.A.S.C. ; Mr. Johannes Human Giliomee, M.Sc. ; Mr. Robert Wilhelm Grünwaldt ; Mr. Philip Edwin Howse ; Mr. Henry Mark Jackson ; Dr. Ibrahim Akif Kansu ; Mr. Trevor John Martin ; Mr. Ansar Husain Naqvi ; Mr. Narendreshwar Bux Rai ; Mr. Richard Graham Thimann.

For the second time (taken as read) : Professor Carlos Salvador Carbonell ; Dr. Geoffrey Ebbage ; Miss Barbara Agnes Hopkins ; Dr. Arthur John Juniper ; Mr. Syed Ghulam Shabbir Kermani, B.Sc. ; Dr. Ronald Harry Wharton ; and Miss Eleanor Mabel St. Aubyn White.

The Secretary read the names of the following newly elected Fellows of the Society : Dr. Derek William Fewkes, Ph.D., D.I.C., Agricultural Research Station for Caroni Ltd., Waterloo, Carapichaima, Trinidad, W. Indies ; Mr. Donald Alister Griffiths, Pest Infestation Laboratory, London Road, Slough, Bucks.; Mrs. Augusta Maheswari Ladduwahetty, B.Sc., Department of Zoology and Applied Entomology, Imperial College of Science, London, S.W.7 ; Mr. Henry John Burman Lowe, Black Abbot's, Mereworth, nr. Maidstone, Kent ; Dr. Margaret Cranston Parsons, Department of Zoology, University of Toronto, Toronto, 5, Ontario, Canada ; and Mr. Robin Jeremy Wootton, 422, Greenford Avenue, Hanwell, London, W.7.

Thanks were voted to donors of gifts to the library since the last meeting.

Mr. A. Davidson, Dr. D. W. Fewkes, Dr. J. P. Glasgow, Mr. A. M. Gower and Mr. I. J. Wyatt signed the Obligation Book and were admitted Fellows of the Society.

The President made a short communication on coremata in male moths. Coremata are extensile thin-walled hairy sacs, often present in the abdomen of male moths. Perhaps the most spectacular known are in the Arctiid moth *Creatonotus gangis* (L.), first photographed by Pagden in 1957 (*Proc. R. ent. Soc. Lond.* (A) **32** : 90–94). For information about their function, and some beautiful photographs, he was indebted to Master Gaden Robinson of Kuala Lumpur. The moths were active only for about an hour near sunset. The virgin female extruded a small scent gland. Males assembled and hung from the vegetation a yard or so away ; each inflated the enormous coremata. Eventually a male (perhaps a new arrival) mated and the remaining males retracted their coremata, folded their wings and rested until next day.

Smaller coremata were present in many British moths and pictures and specimens of the Ruby Tiger (*Phragmatobia fuliginosa* (L.)), White Ermine (*Spilosoma lubricipeda* (L.)) (Arctiidae), the Shaded Broad-bar (*Ortholitha limitata* (Scop.)), the Common Carpet (*Epirrhoë alternata* (Mueller)), the Garden Carpet (*Xanthorhoë fluctuata* (L.)) Hydriomenidae and Early Thorn (*Selenia bilunaria* (Esper)) Selidosemidae were exhibited.

Coremata could easily be preserved in an extended position by inflating the fresh adult moth and drying in the type of oven used for drying inflated caterpillar skins.

The President concluded by saying that the function of the coremata in British moths required study.

Dr. N. Waloff gave a paper on factors controlling a natural population of *Phytodecta olivacea* (Forster) (Coleoptera : Chrysomelidae), an abstract of which appeared on page 21.

The discussion which followed was opened by Dr. C. G. Johnson, who referred to Dr. Waloff's statement that the 88 per cent. mortality due to predation in the Chrysomelid beetle had been estimated serologically. He wondered how the quantitative estimate was obtained. Dr. Waloff replied that in her experiments not only were the numbers of *Phytodecta* being estimated, but also simultaneously the numbers of predators, so that if the number of predators per weekly sample in the field were known the information could be converted into quantitative results.

Dr. J. P. Dempster added that a study of the distribution of bugs on the plants in relation to the beetles suggested that not more than one egg had been taken by each predator at each meal.

Mr. L. P. Lefkovitch asked what was meant by diapause in *Phytodecta* and wondered whether a drop in temperature would not account for the slowing down of larval development. Dr. Waloff said this could not be so as all diapause was in the adult stage when at least eight months were spent in the soil.

Dr. C. R. Ribbands asked how the percentage living for a second year was estimated. Dr. Waloff said the figures were obtained partly from laboratory data, from field soil samples taken up to November and by burying known numbers of beetles in a field enclosure and ascertaining that the survivors emerged in the following year. In one case it was shown that oviposition occurred over three seasons.

The President said he was glad to see it had been possible to demonstrate that predators were responsible for the main population changes. He wondered if it had been possible to show whether the mortality rate in the soil was density dependent. Dr. Waloff said it looked as though this was so, but these factors had not been fully analysed. Predation by Carabidae had been demonstrated serologically, but that by Staphylinidae and ants only inferred from observations.

The President concluded by saying that analyses of this kind were still very difficult and required a great deal of judgment.

Mr. M. J. Way and **Dr. C. J. Banks** gave a paper on population studies on *Aphis fabae* Scopoli (Hemiptera : Aphididae), an abstract of which appeared on page 21.

The President asked if any experiments had been made to detect the effect of the aphid on the plant, as it looked as though some factor might be operating through the plant sap. Mr. Way replied that this had not been gone into in detail. It was very difficult to determine the separate effects of shortage of food, contamination by honeydew and shortage of space, but the last-named was clearly an important factor. The President suggested it might be possible to do so by devising an experiment in which progeny from different cultures, kept constant by reduction, were weighed each day.

Dr. Banks said, in reply to an enquiry by Dr. Johnson, that he could not add anything further on the role of ants in these studies. Mr. Way said that the removal of contaminating honeydew allowed populations to remain viable for a longer period.

Mr. M. F. Walker (a visitor) said that the beneficial nature of small aggregations might be due to ants, to which Mr. Way replied that no ants had been involved in any of his experiments and they could not account for the observed differences in populations coming from two and eight parents. He also said, in reply to an enquiry by Dr. J. S. Edwards, that the winter host was under natural conditions and aphid colonies on it still showed aggregation effects. These were enhanced on bean plants under cultivation which was not a natural condition.

In reply to an enquiry from Mr. G. E. Woodroffe whether two aphids only on a plant always aggregated, Mr. Way said that they would move to more attractive parts of the plant as it grew and did not always keep together, whereas in larger colonies most individuals formed aggregates with at least one other.

Mr. I. J. Wyatt thought there was some analogy with his own work on midges on mushrooms. In the laboratory the highest fecundity came from between four and eight larvae per tube when the population was maintained at a stable level. In mushroom houses, however, the population invariably rose for up to 11 weeks, and then fell because the food became unsuitable. No direct effect of the individuals on each other was observed. He wondered how this was explained.

Mr. L. P. Lefkovitch said an optimum density had been recorded for oviposition in *Tribolium* and his own work on *Cryptolestes turcicus* (Grouvelle) showed that it seemed to have an optimum density associated with cannibalistic and disturbance effects. In *Lasioderma*, oviposition was only affected by food shortage and this might apply to the mushroom population. Mr. Wyatt agreed that this might be so but it could not be the complete answer.

PAUL FREEMAN, *Honorary Secretary.*

ADDITIONS TO THE LIBRARY

Presented

Collin, J. E. *British Flies.* Vol. 6. *Empididae.* Part 2, *Hybotinae, Empidinae* (*except* Hilaria). 8vo. Cambridge University Press, 1961. [The Publishers.]

De Meillon *et al. Plague in Southern Africa.* Vol. 1, *The Siphonaptera* (*excluding Ischnopsyllidae*). 8vo. Pretoria, 1961. [The Publishers.]

Moore, F. *The Lepidoptera of Ceylon.* Vols. 2–3 ; plates, vols. 2–3. 4to. London, 1882–1887. [Mr. E. Ramsay Green.]

The Royal Society of London. *The Tercentenary Celebrations of the Royal Society of London* 1960. Edited by Sir Harold Hartley, G.C.V.O., C.B.E., M.C., F.R.S. 8vo. London, 1961. [The Royal Society of London.]

Sargent, H. B. *A natural history of Porthleven.* 8vo. Kenion Press Ltd., 1961. [The Author.]

South, R. *The moths of the British Isles.* Edited and revised by H. M. Edelsten and D. S. Fletcher. Series 1 and 2. 8vo. London : F. Warne, 1961. [The Publishers.]

Purchased

Dillon, E. S. and Dillon, L. S. *A manual of common beetles of Eastern North America.* 8vo. New York, 1961.

HAUPT, H. *Elemente einer systematischen Aufteilung der Macromerinae m.* (*Hymenoptera-Sphecoidea*) *Fam. Pompilidae, Subfam. Macromerinae. Nova Acta Leopoldina.* N.F.141. Bd. 21 : xi, 5–74, 1959.

Rehn, J. A. G. and Grant, H. J. Jr. *A monograph of the Orthoptera of North America* (*North of Mexico*). Vol. 1. 4to. Philadelphia, 1961. [*Monogr. Acad. Sci. Philadelphia* 12.]

Die Tierwelt Deutschlands. Tiel 48, *Kleinschmetterlinge oder Microlepidoptera*, by H. J. Hannemann. 8vo. Jena, 1961.

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